Health Consultation — Henry County

Locust Grove Mercury Response
March 9, 2004

Introduction
The Georgia Division of Public Health (GDPH) received a request from the U.S. Environmental Protection Agency (EPA) for assistance in investigating and evaluating the public health implications of a mercury theft and release incident, which took place in Locust Grove, Georgia on March 29, 2003. Because mercury was precariously handled (resulting in a residential release), GDPH determined that a health consultation assessing the potential for adverse health effects associated with metallic mercury exposure was warranted. The health consultation evaluates potential pathways of exposure to metallic mercury based on a review of incident documentation and sampling data provided by the EPA.

Site Description and History
The mercury spill site is located in Locust Grove, Henry County, Georgia, within the interior of a doublewide mobile home. The home sits on a small residential lot and the community has no commercial or industrial activities onsite. The community has a clubhouse, swimming pool, recreation area, and contains more than 50 homes. The population within 1 mile of the site is estimated to be 300-400 persons and is primarily residential in a rural setting. No effort was made to identify vulnerable animal populations, habitats, or other natural resources since the release was limited to the interior of the home .

The mercury spill was a result of an incident that happened on the evening of March 29, 2003, while the homeowner was receiving treatment for an unrelated illness at a local hospital. Several teenage friends accompanied the homeowner to the hospital, during which two teenagers entered a locked emergency room and dismantled two sphygmomanometers (blood pressure gauges) to obtain mercury to play with. The mercury was taken back to the home and played with by approximately five individuals in the living room and the kitchen table. These individuals threw globules at each other and reportedly attempted to "melt" the mercury by placing it on a spoon and heating it with a lighter. As people walked on the mercury, it contaminated their shoes, and was carried throughout the home. Some of the mercury was reportedly dumped in the trash outside the home and in the kitchen sink (the homeowner has a septic system). A 3-month old child of the homeowner was living in the home during this episode. Family members attempted to clean up the mercury but were unable to collect all of it.

On April 1, 2003, EPA dispatched an On-Scene Coordinator (OSC) and EPA's Superfund Technical Assistance and Response Team (START) contractor to assess the release. EPA's OSC and START contractor performed initial air sampling. Mercury release was confirmed by a Lumex mercury vapor analyzer. Air contamination throughout the home was above action levels although metallic mercury was only observed in the carpeting of the dining room area. The occupants were relocated until remedial actions were completed.

GDPH identified the names and home addresses of individuals who may have come in contact with the metallic mercury and transferred that contamination to other locations. During the remediation activities, EPA's contractor surveyed four additional homes located in the area. All the homes revealed the presence of mercury brought in by shoes and clothing worn by individuals who had played with mercury, but only one home on Sioux Street contained mercury contamination high enough to warrant remediation.

On April 5, 2003, the residents at the Sioux Street home were relocated to a nearby hotel. The same remediation process used at the first home was used on the Sioux Street home.

Environmental Sampling
The EPA contractor implemented a confirmation sampling and analytical program after the remediation effort was completed at each of the two homes. The program was designed to determine if the remediation activities were successful in reducing mercury levels to acceptable recommended levels for residences.

Results
After the initial treatment, confirmation sampling at the two homes was performed on April 8, 2003. At the first

home, air sampling results confirmed that treatment was successful in reducing mercury concentrations to near the recommended atmospheric exposure limits for mercury in residential establishments. Air sampling analytical results indicated that the home on Sioux Street required retreatment. Following retreatment, a second round of confirmation samples was collected on April 11, 2003. Analytical results confirmed the second treatment was successful in reducing mercury concentrations below the recommended atmospheric exposure limits for mercury in residences. The mercury vapor levels in these homes will decrease over time through normal ventilation.

The individuals who played with metallic mercury at handled it precariously. This led to subsequent exposure to metallic mercury and mercury vapor. At a minimum, the individuals who played with the mercury, and the two other residents living in the mobile home inhaled mercury vapors. The individuals who handled the metallic mercury were likely exposed to dermal (skin) absorption as well. Allegedly, one individual ingested a small amount of mercury. No urine or blood samples were obtained on the exposed individuals after the incident occurred; therefore, actual body burden levels were not determined. Because of the physical and chemical properties of metallic mercury and the known toxicity characteristics associated with exposure to metallic mercury, the inhalation of mercury vapor raises the most concern.

Conclusions

Because exposures were of a short duration, and estimated doses were lower than those expected to produce adverse health effects, GDPH considers this incident to have posed ***no apparent public health hazard*** for the short-term exposure to metallic mercury sustained by individuals considered in the health consultation.

Recommendations

There are no recommendations at this time.